THAT WHICH IS CLAIMED:

1. A method of injecting and combusting combustion fluids in a combustion chamber, comprising:

injecting at least one stream of oxidizing fluid into the combustion chamber, the oxidizing fluid comprising oxygen and substantially free of nitrogen and sulfur;

alternatingly injecting a first combustion fuel through a first plurality of fuel jets into the combustion chamber and a second combustion fuel through a second plurality of fuel jets into the combustion chamber, such that the first and second combustion fuels impinge on the stream of oxidizing fluid in the combustion chamber; and

combusting the combustion fuel with the oxidizing fluid.

2. A method according to Claim 1 wherein injecting a first combustion fuel comprises injecting the first combustion fuel from the first fuel jets located at a first plurality of locations about each stream of oxidizing fluid such that the first combustion fuel from the first plurality of locations impinges on the respective stream of oxidizing fluid and wherein injecting a second combustion fuel comprises injecting the second combustion fuel from the second fuel jets located at a second plurality of locations about each stream of oxidizing fluid such that the second combustion fuel from the second plurality of locations impinges on the respective stream of oxidizing fluid.

3. A method according to Claim 1 further comprising injecting a recycle gas comprising steam and carbon dioxide into the combustion chamber through a first annular space at an inside perimeter of the combustion chamber.

4. A method according to Claim 1 wherein injecting a first combustion fuel comprises injecting a synthesis gas of hydrogen and carbon monoxide and wherein injecting a second combustion fuel comprises injecting methane.

5. A method according to Claim 1 wherein injecting a first combustion fuel and injecting a second combustion fuel comprise injecting the first and second combustion fuels at dissimilar mass rates.

6. A method according to Claim 1 wherein injecting the first combustion fuel comprises injecting the first combustion fuel through a manifold comprising an annular space that extends circumferentially around at least one of the main jets.

7. A method according to Claim 1 wherein injecting a first combustion fuel comprises injecting the first combustion fuel into the combustion chamber at a converging angle of between about 10° and 45° relative to the central axis of one of the at least one streams of oxidizing fluid such that such that the first combustion fuel impinges on the respective stream of oxidizing fluid in the combustion chamber and wherein injecting a second combustion fuel comprises injecting the second combustion fuel into the combustion chamber at a converging angle of between about 10° and 45° relative to the central axis of one of the at least one streams of oxidizing fluid such that the second combustion fuel impinges on the respective stream of oxidizing fluid in the combustion chamber.

8. A method according to Claim 1 further comprising circulating a coolant fluid through at least one coolant chamber in an injector body.

9. A method according to Claim 1 wherein injecting at least one stream of oxidizing fluid comprises injecting a plurality of streams of oxidizing fluid, each stream having a center located at least about 4 inches from the centers of the other streams.

10. A method according to Claim 1 wherein injecting at least one stream of oxidizing fluid comprises injecting a stream of oxidizing fluid with a diameter of at least about 1 inch.

11. A method according to Claim 1 wherein injecting a recycle gas comprises injecting steam and carbon dioxide into the combustion chamber to limit the combustion temperature to about 4000° F.